

Addressing Practical Issues in Atomic Force Microscopy-Based Micro-indentation on Human Articular Cartilage Explants

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Citation

 Daniel, C., Alexander, D., Umrath, F., Danalache, M. Addressing Practical Issues in Atomic Force Microscopy-Based Micro-indentation on Human Articular Cartilage Explants. *J. Vis. Exp.* (188), e64371, doi:10.3791/64371 (2022).

Date Published

October 28, 2022

DOI

10.3791/64371

URL

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Materials

Name	Company	Catalog Number	Comments
Amphotericin B	Merck KGaA, Darmstadt, Germany	1397-89-3	
Atomic force microscop (AFM) head	CellHesion 200, Bruker Nano GmbH, Berlin, Germany	JPK00518	
Biocompatible sample glue	Bruker Nano GmbH, Berlin, Germany	H000033	
Calcein AM	Cayman, Ann Arbor, Michigan, USA	14948	Cell membrane permeable stain, used for cartilage disc sorting- top view imaging
Cantilever	Bruker Nano GmbH, Berlin, Germany	SAA-SPH-5UM	Frequency Nom: 30KHz, k: 0.2N/m, length nom: 115µm, width nom: 40µm, geometry: rectangular, cylindrical tip with a 5µm end radius
Cartilage cutting device	Self-made	n/a	Cutting plastic device containing predefined wholes of 4mmx1mm
CDD camera integrated in the AFM	The Imaging Source Europe GmbH, Bremen, Germany	DFK 31BF03	
CDD camera integrated in the fluorescence microscope	Leica Biosystems, Wetzlar, Germany	DFC3000G	
Cryotome	Leica Biosystems, Wetzlar, Germany	CM3050S	
Data Processing Software for the AFM	Bruker Nano GmbH, Berlin, Germany	n/a	Version 5.0.86, can be downloaded for free from the following website https://customers.jpk.com
Dulbecco's modified Eagle's medium (DMEM)	Gibco, Life Technologies, Darmstadt, Germany	41966052	
Fluorescence Microscope (Leica DMI8)	Leica Biosystems, Wetzlar, Germany	11889113	
Glass block cantilever holder	Bruker Nano GmbH, Berlin, Germany	SP-90-05	Extra long glass block with angled faces, designed especially for the use with the JPK PetriDishHeater™ (Bruker).
Inverted phase contrast microscope (integrated in the AFM)	AxioObserver D1, Carl Zeiss Microscopy, Jena, Germany	L201306_03	

Leibovitz's L-15 medium without L-glutamine	Merck KGaA, Darmstadt, Germany	F1315	
Microscope glass slides	Sigma-Aldrich, St. Louis, Missouri, USA	CLS294775X50	
Mounting medium With DAPI	ibidi GmbH, Gräfelfing, Germany	50011	Mounting media with nuclear DAPI (4',6-diamidino-2-phenylindole) counterstaining used for cartilage discs side view imaging
Penicillin-Streptomycin	Sigma-Aldrich, St. Louis, Missouri, USA	P4333	
Petri dish heater associated with AFM (Petri Dish Heater)	Bruker Nano GmbH, Berlin, Germany	T-05-0117	
Scalpel	Feather Medical Products, Osaka, Japan	2023-01	
Silicone Skirt	Bruker Nano GmbH, Berlin, Germany	n/a	Protective silicone membrane (D55x0.25) which is placed on the basis of the base of the glass block to prevent medium condensation in the AFM head.
Statistical program - SPSS	IBM, Armonk, New York, USA	SPSS Statistics 22	Vesion 280.0.0.0 (190)
Tissue culture dishes	TPP Techno Plastic Products AG, Trasadingen, Switzerland	TPP93040	
Tissue-tek O.C.T. Compound	Sakura Finetek, Alphen aan den Rijn, Netherlands	SA6255012	Water-soluble embedding medium